

# A CESO's battery primer

by Capt. Howard R. Cuozzi

***The most sophisticated technology will come to a dead halt if its battery runs down, and it will be too late to order more or to wait for a recharge.***

Will your unit run out of batteries before it runs out of bullets? Will your unit's mission capability be crippled for lack of non-automotive batteries required by an ever increasing amount of military hardware? The most sophisticated technology will come to a dead halt if its battery runs down and it will be too late to order more or wait for one to recharge.

As custodian of the wide spectrum of electrical equipment in his unit, the battalion Communications-Electronics Staff Officer (CESO) will inevitably become involved in the subject of non-automotive batteries, those dry-cell batteries other than large vehicular types. Supply Bulletins (SB) 11-6 and 11-30 are the primary publications for these batteries. This article is intended to highlight essential information from these bulletins, introduce new information not yet in them and pass on lessons learned from my own experiences.

The first category of batteries that the CESO will encounter is the BA 1-4999 series of regular carbon zinc, mercury or alkaline batteries. A battalion may have a need for as many as 10 different types of these. They are either Class 2 or 9 and will be bought at self service supply or ordered through your unit PLL.

Storage of regular BA batteries is best in a refrigerator which is authorized for this purpose by CTA 50-909. Computation of shelf life and storage notes is found in SB 11-30.

The BA 5000-5999 lithium batteries are the second category. These batteries are usually used in the same equipment as the BA 1-4999 series or the rechargeable BB series and are an alternative power source with their own advantages and disadvantages. They have a very long operating and shelf life, up to 4-7 years in storage. They are also expensive and have special handling considerations. Labeled "flammable", they must be stored accordingly. Lithium batteries have also had problems with gas leaking from them, so adequate ventilation is essential in using equipment and storage. As with any battery, lithium batteries should not be left in equipment during extended periods of disuse.

The BB series of rechargeable batteries is the third and final category I'll address. Made with nickel cadmium, and often referred to as "nicads", these are most often for training purposes. While initially expensive to purchase, they are quite cost effective and economical in the long run. Many, but not all, have regular or lithium replacements for combat. The distribution of charging equipment and a viable charging plan

Item	Auth by MTOE	Type of Battery	# Reg for Operation	Combat Factor at 70° for 30 Days	A x C Total Req	D x E 30 Day Load	Unit of Pkg	Pkg Req for Basic Load	15 Day Basic Load	Remarks
AN/PRC-77	21	BA 4386	1	6.72	21	141	1 EA	141 EA	71 EA	Use either of these batteries for operations
	21	BA 5598 (Lithium)	1	.5	21	11	1 EA	11 EA	6 EA	
AN/PVS 4	23	BA 1567	1	44.4	23	1012	20 EA	51 Boxes	26 Boxes	Same as Above
	23	BA 5567 (Lithium)	1	.5	23	12	1 EA	12 EA	6 EA	
KY 57 speech secure	133	BA 1372	1	.46	133	61	20 EA	3 Boxes	2 Boxes	This battery always required in addition to either the BA 5590, BB 590 or vehicle power
	133	BA 5590 (Lithium)	1	.25	133	34	1 EA	34 EA	17 EA	
	133	BB 590	1	Re-chargable	133		Unit will require 1 or 2 batteries per item as backup to allow constant recharging and quick replacement			

**Example Load Planning**

and SOP will probably be a task for the CESO. For some types of these batteries the chargers will be available in the unit but others can only be charged by a support maintenance shop. Rechargeable batteries are especially critical in the field artillery and much of the new technology being fielded by that branch.

Next step in dealing with batteries is the basic load planning. This is based on the Signal center Practical Exercise 2317 and has proven to be a valuable model for our planning. First list the items using batteries, remembering that some use more than one type of battery. An example of this is the KY-57 Vinson, which always needs a BA-1372 and when not vehicularly powered also needs either a BB0-590 rechargeable or BA-5590 lithium. Column A is "authorized by MTOE" although you can modify that to be "items on hand" if there is a difference. Column B is "type of battery" and figure 1 of SB 11-6 will list the types of batteries used in each piece of equipment as of its 1982 publication. Figure 1 also provides column C "number required for operation". In the case of rechargeable batteries you will need to add additional batteries to continue

operating while recharging. Column D is "combat factor at 70° for 30 days", also from figure 1. For your area of operations, figure 1 also has factors for arctic and tropical climates. These factors can be modified as you keep records of your unit's consumption. Column E is the "total requirements" for either the MTOE or on-hand, whichever you're figuring and is gotten by multiplying column A times column C. The "30 day load" is column F and is the result of column D times column E. Tables 3 SB 11-6 or 11-30 are the same and provide column G "unit of package" in addition to weight and size data. Don't forget batteries in your load plans and cards. Dividing column F by column G provides H "package requirements for basic load". Half of H results in the last column, I "15 days basic load".

I will divide equipment using batteries into a general category and a field artillery category. The general includes items found at all levels and types of organizations. Good examples are TA-312 telephones and GRA-39 radio remote sets. Both use BA-30 batteries and in the case of the GRA-39, quite a lot of them. Temperature is an especially critical factor in regular battery consumption. PRC-77s have both a regular and a lithium battery. The lithium is half

the size of the regular and two lithium batteries, instead of one regular, are carried in the battery compartment. KY-57s and the Vinson family of equipment use the same batteries. The BA-1372 is small but absolutely essential for the Vinson equipment to keep its memory and transfer information. Due to its relatively long life, about 3 months in temperate weather has been our experience, its replacement can be regularly scheduled quarterly. In addition to the BA-1372, the KY-57 may need an additional battery for power if it is not used with a vehicular mounted system. There are two choices available, the BB-590 rechargeable and the BA-5590 lithium. There have been some accidents reported with some of the BA-5590s and care should be taken in its handling. Night sights are the last items I'll discuss in the general category. Night vision goggles and sights, except the TAS-4 Tow and GLLD night sight, have regular BA-1567 and lithium BA-5567 batteries available. Especially in the case of night sights, regular battery consumption is greatly higher than the lithium.

**Gen. George S. Patton on leadership:**

***Never tell people how to do things. Tell them what to do, and they will surprise you with their ingenuity.***

*It will be too late to think about ordering or charging batteries when and if the balloon goes up.*

The field artillery has fielded a number of battery-using systems in the recent years. The TACFIRE system has requirements at all levels. The KG-31 Secure device used with TACFIRE uses the BA-1372 but our experience has shown that for this system the consumption rate is almost twice that of Vinson equipment. The Digital Message Device (DMD) used by the Fire Support Teams (FIST) for TACFIRE are mostly vehicularly powered but airborne, air assault and light infantry units will use them in battery powered configurations. The batteries available are the rechargeable BB-557 and the lithium BA-5557. Recharging the DMD batteries requires prior planning so as to insure sufficient initial batteries for deployment and subsequent use. The Ground Laser Locator Designator (GLLD) is another FIST asset now being used in the artillery that has battery requirements. Again, primarily vehicularly powered, the GLLD can use the BB-704 rechargeable when necessary. The GLLD night sight, previously mentioned, uses the BB 503 rechargeable as its power source. The PP-7286/U charger was originally intended for the DMD, GLLD and night sight batteries. It is

not currently available and is mostly replaced by locally manufactured substitutes or smaller, less versatile chargers. Neither are really adequate for field use. The Laser Rangefinder GVS-5 uses the BB-516 and the charging capability for that is found only at the Direct Support Maintenance. Prior coordination to insure that this equipment will be available is essential. Before you deploy to the National Training Center (NTC) or wherever be sure that your support unit is bringing its charger. You will also need to address the question of charging during operations and how the batteries will flow from the FISTs up front back to the support area and back up front again.

It will be too late to think about ordering or charging batteries when and if the balloon goes up. I've tried to identify the main areas of battery logistics and maintenance. It's a subject that may require additional coordination with your support units and material management center so that they are aware of the importance of batteries to your mission. Some leg and paperwork now, though, will pay off in the future.

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